



U.S. Manufacturing and the Economic Outlook

Introduction

The lobby of the Federal Reserve Bank of Cleveland has beautiful historic paintings that capture the story of our region in the 1920s. One painting is of a map that includes symbols that show the drivers of economic activity in the country at that time. It reminded me of the maps we used to draw when we were studying state history. The teacher would give us a piece of paper with an outline of the state on it, and then we would have to draw pictures that symbolized the different businesses that were important to our state. I grew up in Ohio and I remember drawing an airplane for Dayton, a steel mill and auto plants in Cleveland, barns for farms across the state and, of course, glass for Toledo. I'm sure some of you share that memory with me.

What would we draw on our state map today? Surely, things have evolved over time. Today, I would sketch in universities, research facilities and bio-medical centers. In addition to physical resources, my map today would also focus on human resources and skills. But it is important to note that all these years later, manufacturing would still hold a prominent place on my map. Indeed, the primary focus of my talk this afternoon will be about manufacturing and the forces that are constantly at work reshaping the global manufacturing economy -- technology, productivity, and location.

Before I turn my attention to these matters, however, I will first present an overview of the current economic conditions facing the country and briefly discuss the path of manufacturing through the recovery. As always, the views I express are mine alone and do not necessarily reflect those of my colleagues in the Federal Reserve System.

Economic Outlook

This has been a painfully slow economic recovery. The recession ended two years ago and yet we are just now returning to the output levels we had reached before the recession began in late 2007. Yes, we have had a few quarters of solid economic activity but mostly we have had weak growth.

We all know that the United States is a consumer-driven economy. Consumer spending makes up roughly two-thirds of GDP. In this recovery consumers have been reluctant to increase spending in the face of weak income growth and the loss of household wealth. In fact, many households are focused on paying down debt and increasing savings. Housing markets remain subdued, the government sector is very constrained, and international markets are unsettled. These headwinds continue to create challenges for businesses,

Additional Information

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employees, and families.

Certainly, we have seen a few areas of strength in this recovery. Business investment in equipment and software has been solid. Exports have rebounded. After lackluster output growth in the first half of this year, the third quarter looks like it was somewhat better, with growth that I estimate to be roughly 3 percent. But overall, the economy is still underperforming relative to past recoveries.

The net result of the recent weakness in output growth is that there has been almost no rebound in the labor market. Unemployment remains high, at over 9 percent, and job growth has been anemic. Since the end of 2009, the U.S. economy has generated only 2.5 million new private-sector jobs. At the same time, public-sector employment has declined by roughly 500,000 jobs. This means the economy has gained back, on net, a little over 2.0 million jobs, leaving us still short roughly 6.7 million jobs from the start of the recession.

A particularly troubling aspect of our current unemployment problem is the long duration of unemployment experienced by many individuals. Nearly half of the unemployed have been out of work for more than six months, and this statistic does not include the substantial number of individuals who have simply left the labor market. This level of long-term unemployment is unprecedented since the Great Depression. The average duration of unemployment today is about 40 weeks. This is double the previous high of 20 weeks, which occurred in 1984 following the 1982 recession.

Some people think that our recent recession has impaired our labor markets, and that we must accept permanently higher unemployment rates -- that is, we have seen a rise in structural unemployment. I can understand why employment in homebuilding, for example, will not return to pre-recession levels for a very long time. And it is true that some skill sets of the unemployed no longer match well to those skills currently needed by employers. However, based on research from my staff, I think the most important reason for our high unemployment rates is that spending by consumers, businesses, and government still remains uninspiring. [\[i\]](#) In other words, these higher rates of unemployment are predominantly cyclical in nature.

Indeed, my interpretation of the incoming data is that weakness in overall spending explains current labor market conditions very well. In the two years since the recovery began, GDP growth has averaged only 2.5 percent, a lackluster performance by any measure. The employment path we are on is a direct result of the weak output growth we have experienced. To put this in context, we need a growth rate of around 2 percent just to accommodate the new entrants into the workforce. In order for the U.S. economy to make substantial progress on reducing unemployment, economic growth clearly needs to accelerate. Unfortunately, I don't expect the pace of growth to pick up very soon; my outlook for real GDP growth in 2012 is about 2 percent, on par with the past two years.

Manufacturing in the Recovery

Now I'd like to turn to the experience of the manufacturing sector in the recession and recovery. The weight of the recession fell heavily on manufacturing, and I know that many of your own personal experiences lie behind the summary statistics I am now going to recite.

During the recession, production decreased by 20 percent, employment fell by 16 percent, and over 2 million manufacturing jobs were lost. The declines were widespread, and the subsequent recovery of jobs has been modest. Production has risen but remains

well below pre-recession levels. Employment has rebounded, though only by a few percentage points.

The manufacturing sector has experienced some growth during the recovery with pockets of strength and weakness. On the positive side, exporters, machinery producers, and high technology firms have shown good growth. U.S. manufactured exports have risen briskly over the last two years, aided by the value of the dollar. A common link among these better-performing industries is that they manufacture products that result in productivity improvements, and thus improvements in their customers' bottom lines. Conversely, manufacturing industries linked closely to the construction industry have had almost no recovery. And, many industries that experienced declining production prior to the recession, such as apparel and textiles, have continued to struggle throughout the recovery.

I am pleased to note that the automotive sector -- a sector of critical importance to the U.S. and Midwest economies -- has performed reasonably well lately. Although U.S. domestic production remains well below pre-recession levels, car and truck production continued to expand moderately during the first three quarters of 2011, even in the face of supply disruptions caused by the Japanese tsunami. The modest progress made in the automotive sector reflects, in large part, the constraints that households face: high unemployment, slow income growth, and high debt levels.

While there is good and bad news on the output side of manufacturing, there is little good news to report on the employment front. During the recovery, manufacturing has added back only 300,000 workers - less than 15 percent of the 2 million manufacturing jobs lost during the recession.

Long-term Prospects for U.S. Manufacturing

As the overall recovery gains more traction, manufacturing will certainly benefit. However, the future of manufacturing in the U.S. economy will be influenced by forces that have been reshaping manufacturing over the last several decades - those being technology, productivity, and location decisions.

Focusing first on technology, U.S. manufacturing has been both a creator and an adopter of technology. While sometimes overlooked, manufacturing remains an important center of innovation in the United States. The National Science Foundation recently reported that manufacturers accounted for roughly 70 percent of R&D spending by U.S. businesses. These R&D investments translate into new products and production methods and have the potential to raise productivity both inside and outside the manufacturing sector.

Manufacturing is also a major adopter of new technologies, becoming more capital intensive along the way. The business people I talk to consistently tell me that new technological innovations have driven down the relative price of machinery, which has further encouraged manufacturers to modernize by investing more in new plant and equipment.

However, the new technologies being adopted often require a different type of workforce. These technologies favor the employment of more highly skilled workers. Over the last several decades, we have seen large employment reductions in blue-collar and middle-skill occupations in manufacturing. At the same time, the number of college-educated workers employed in manufacturing has actually risen, so that the sector is now considerably more skill intensive.

The improvements to technology, capital, and labor quality have

raised productivity both within manufacturing and in the economy at large. In the two decades prior to the recession, labor productivity in manufacturing roughly doubled, with output rising by 65 percent and labor hours declining by 20 percent. This resulted in the loss of 3.7 million jobs in the prosperous decades before the onset of the job losses in the recent recession. These twin trends of rising labor productivity, along with reductions in labor usage, have only been reinforced by the recession.

Let me make two quick points to put the rising productivity of U.S. manufacturing in a global context. First, the broad shifts in output and employment we have seen in manufacturing are not unique to the United States. Almost all developed economies have experienced expansions in manufacturing output along with significant declines in employment over the last several decades. This is true in countries running trade deficits, like the United States, but also in countries running trade surpluses, such as Japan and Germany. Second, labor productivity growth in U.S. manufacturing has substantially exceeded labor productivity growth in manufacturing in many other developed countries around the world. The United States remains a very competitive manufacturing nation.

In the future, I expect these broad trends to continue. U.S. manufacturers are likely to become even more capital and skill intensive, leading to further productivity gains. How these trends actually play out in terms of output and employment in the United States, however, will depend on a set of other forces influencing the environment that manufacturers operate in.

A particularly important force that I do want to discuss is location. We are all familiar with that phrase that Realtors[®] use: location, location, location. From my perspective, that same phrase also applies to manufacturing. We need to understand first, what determines the location of manufacturing production around the world; second, what drives U.S. manufacturing firms to locate their facilities in various places in the world; and third, what leads a company to locate its production inside or outside the corporate enterprise.

The location of manufacturing activity around the world continues to move, as it always has. Manufacturing moved from Europe to the United States in the 19th century, from the north to the south in the United States over the latter parts of the 20th century, and from the United States to Asia in the late 20th century, all following growth opportunities. Today's newly emerging and developing countries such as China, Thailand, and Brazil, have expanded their manufacturing activity to meet both domestic and international demand as their economies have grown and matured. This has changed the landscape of global manufacturing once again.

Not only has total manufacturing activity been shifting location, but which products get made where has changed markedly as well. Developing economies have tended to produce labor-intensive, low-cost goods. Their growing presence on the world stage pits them against those U.S. manufacturers that have also been using labor-intensive techniques and have typically relied on less-skilled workers. These industries, such as apparel and textiles, have suffered substantial employment loss in the United States. In response, U.S. manufacturers have shifted their product mix toward more skill-intensive tasks, such as product design and development, and more customized and highly skilled production, where the United States retains a comparative advantage.

Still, even with this significant expansion of global production, the United States remains home to an important fraction of the world's

manufacturing value added. The World Bank estimates the U.S. share of worldwide manufacturing at roughly 20 percent for 2009, a little higher than China's share. The difference, of course, is that China and other emerging market countries have been rapidly increasing their shares of manufacturing production and increasing exports. This pressure to innovate and raise productivity is only likely to continue, as I expect our trading partners to make additional investments in manufacturing infrastructure, technologies, and human capital.

The second locational force that I see reshaping manufacturing and the U.S. corporate sector more broadly is the globalization of firms. Many U.S. firms have become international in scope - not only selling worldwide but producing worldwide. Indeed, U.S. multinational companies employ almost one-third of their workforce outside the United States, and the proportion for manufacturing companies is even higher, over 40 percent. Of course, some of this activity has gone on for decades, but the growth of the global footprint for many U.S. companies has accelerated.

The reasons behind this expansion are multifaceted. At the micro level, some producers are looking to lower costs; some producers are looking to get closer to their customer base; and some firms are responding to incentives offered by host countries. There are also macro forces at work pulling U.S. firms abroad. The overall costs of international expansion have broadly declined due to changes in technology and to improvements in host-country infrastructure, human capital, and institutions. Trade policy has affected the international environment, leading to greater openness in the world economy and, as I said earlier, developing economies are growing faster than developed economies.

What we know about this globalization process is that U.S. multinationals have expanded markedly overseas in the last decade, increasing employment and sales in their foreign affiliates. Clearly, some of this shifting of activity represents the offshoring of production for export back to the United States, but I would caution against equating all foreign activity by U.S. multinational companies with that practice. The majority of economic production of foreign affiliates of U.S. multinationals simply remains abroad, much of it servicing customers in local markets.

The final locational force I want to discuss is outsourcing - that is, when a company decides to purchase goods or services from another company rather than producing them in-house. Contracting out activities can result in production moving to a location within the same country or across borders, and has been driven by both costs and technological change. The industrial structure of the automotive sector has been reconfigured by such activity.

U.S. trade has been shaped by this outsourcing activity, as the amount of imported intermediate goods into the United States has risen sharply over the last decade. Consequently, demand for both labor and capital has diminished in certain U.S. manufacturing sectors, but at the same time has allowed some of our domestic companies to gain efficiencies in their supply chains and expand their overall production. Fundamentally, outsourcing--international or domestic -- allows firms to become more specialized in the production tasks in which they excel. Outsourcing provides one more way for companies to remain profitable and more viable over time.

All of these locational forces influence where manufacturing takes place. On balance, these forces have been pulling manufacturing activity outside the United States. Going forward, however, this shifting of production abroad is not a foregone conclusion. Indeed, individual manufacturers will ultimately decide where the most productive and profitable locations are, and they will respond

accordingly. Their location decisions will certainly be influenced by the infrastructure in place, trade and tax policies, and the regulatory environment.

But one of the most important forces that will determine where firms locate is the quality of human capital available in a region or nation. We develop human capital through the investments we make in education and training. These investments not only build the needed workforce of the future, but also form the foundation of our ability to innovate both in and outside of manufacturing. In the end, these investments in human capital are what will help determine the productivity and the standards of living of nations.

Unfortunately, the United States has been falling behind other countries in the development of human capital, as measured by educational performance. In a ranking of 24 developed countries by the OECD, the United States slipped in terms of college graduation rates from a ranking of 2nd in 1995 to 13th in 2008. This is not because the United States is backsliding in college graduation rates, but rather because other countries around the globe are passing us by. In Ohio, we rank 38th out of the 50 states for the percentage of the population with college degrees.

Clearly we need to improve our educational performance. I see particular gaps in our education system around points of transition - from home to kindergarten, from grade school to high school, from high school to college, and from school to the workforce. These transitions are particularly hard to navigate for individuals that are not on a typical college degree track. And I fear it is increasingly difficult for these individuals to obtain workforce skills and access to job ladders that have solid career potential. So we need to respond by making improvements to pre-K and K-through-12 education; support for math, science, and engineering in higher education; and funding for basic research. In some sense, we need a more robust education supply chain, if you will, to increase the efficiency of our educational investments and to improve the outcomes for our children.

Conclusion

The painting in my Bank's lobby, which I mentioned at the beginning of my remarks, would look mostly the same if it were painted today as it did when it was painted in the early 1920s. The painting recognizes the importance of manufacturing in the U.S. economy and in the economy of the Midwest. But we now know what the painting of the 1920s does not reflect - that the structure of manufacturing continues to evolve rapidly. Manufacturing is being shaped by forces of technology, productivity, and location. Manufacturing remains an important part of a healthy U.S. economy, but it operates in a very competitive environment. As an industry, manufacturing needs to be agile in responding to the competitive environment, strive for efficiency gains, and constantly update technology. As a country, in order for us to remain competitive, we need to constantly improve our human capital and workforce skills.

[i] "[This Time May Not Be That Different: Labor Markets, the Great Recession and the \(Not So Great\) Recovery.](#)" by Murat Tasci. 2011. Federal Reserve Bank of Cleveland, *Economic Commentary*, 2011-18.
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["High Unemployment after the Recession: Mostly Cyclical, but Adjusting Slowly,"](#) by Murat Tasci, 2011. Federal Reserve Bank of Cleveland, *Economic Commentary*, 2011-02. [link is: <http://www.clevelandfed.org/research/commentary/2011/2011-02.cfm>]

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